Foreign Direct Investment Expo
UAS Panel

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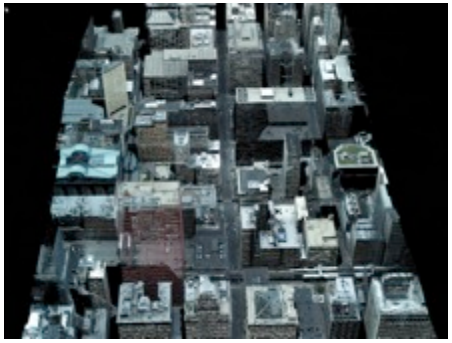
Pictorvision Inc.

Van Nuys, CA

Formerly the Entertainment Division of Wescam

Aerial Cinematography specialists for 45 years



2 Academy Awards for Technical Achievement
Wescam
Eclipse

1 SOC award for Technical Achievement
Eclipse

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Some Recent Credits

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What is a Drone / UAV / UAS?

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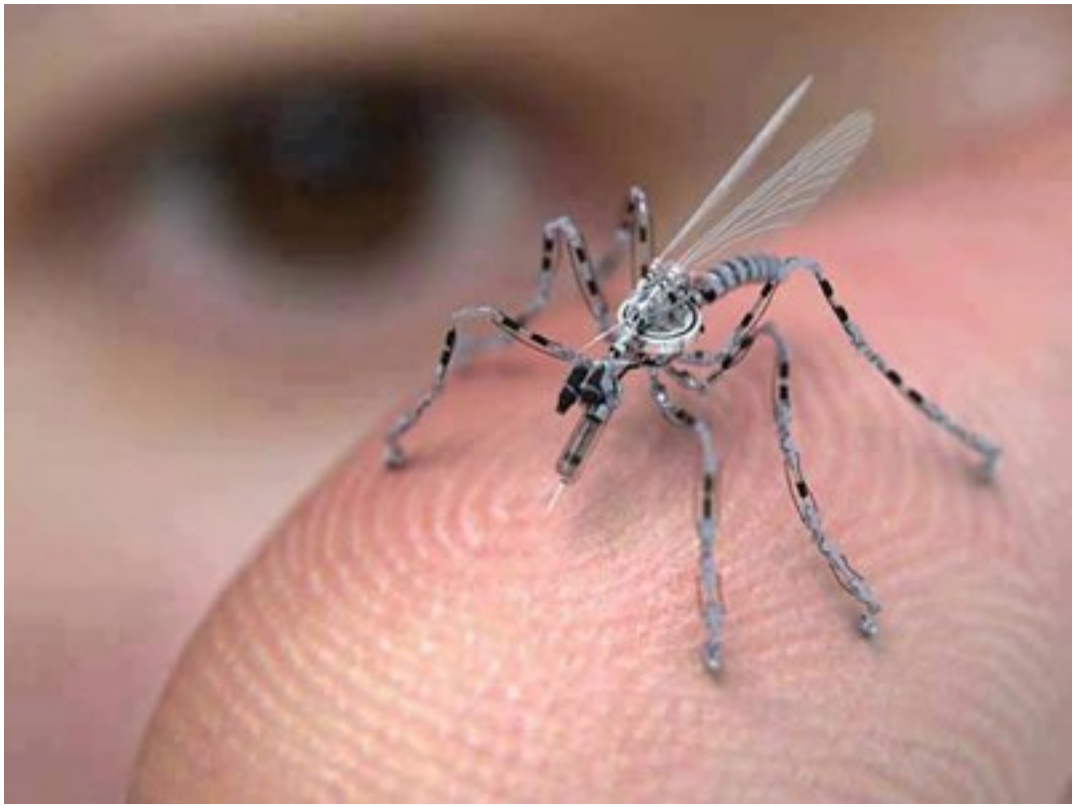

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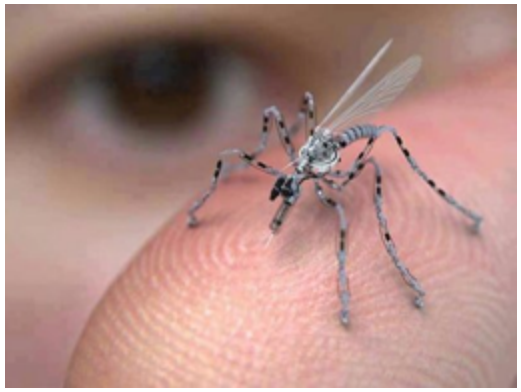
How do you group these all together?



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"Small" UAV's suitable for Entertainment Use

- Under 55 lb.
- Under 400 ft. AGL
- Line of Sight

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Typical Drones for Film Making

- Octo-Copter:
  - 8 Arms each with one motor and prop
- X 8 or Hex 8
  - 4 arms each with 2 sets of motors and props
  - Motors run coaxial: push /pull
- Electric Powered
- 7-15 min flight times

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Typical Gimbals, Camera and Lenses

Red Dragon or Panasonic GH4
Short lenses
FIZ drive capabilities are just arriving
HD downlinks
Movi, Zenmuse or custom gimbal

Size and weight are the enemy. They reduce flight time

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What Drones are Good for

- Low altitude shots
- Difficult Locations to get to
- Small spaces
- Close Range (but not too close)
- Inside (sometimes)
- Those shots between the reach of a crane and a full sized helicopter

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What Drones are NOT Good for

- High Altitude
- Long runs beyond line of sight
- High speed
- Inclement weather (rain or high wind)
- Large cameras or lenses
- Over crowds or developed areas (for now)
- When recording sound (they do make noise)

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Are Drones Cheaper?

- Often but not always
- 3-4 Man crews
- Serious FAA maintenance records
- Extra steps for flight permissions
- Slower to reposition via ground than flying

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Challenges in Todays UAV Market

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Challenge: FAA Legal Restrictions

- Under 55 Lb.
- Under 400 ft. AGL
- Licensed Pilot
- Line of Sight
- Visual Observer
- 50 Knots

- No night Flying
- No operating from moving vehicle
- 500 ft. away from non-participants

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Challenge: Competition

- Barrier to entry can be low
  - Almost no skill
  - Reasonable cost for entry level gear
  - 2020 exemptions granted as of 10/27/15
- No enforcement of existing rules
- Media attention has been huge
- Un-Educated Customers
- Idiots doing idiotic things!

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Challenge: Equipment

- Not Commercial Grade
- Not Job Specific
- Exposed Props are a Concern
- Unknown Quality

Challenge: Scalability

- Line of sight limits area that can be covered
- Distance to public limits locations
- Licensed Pilot requirement limits pool of workers
- Shipping of Batteries is difficult

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Challenge: Scalability

Weather Dependent

- No rain
- Winds under 20 Knots

- Altitude effects performance
- Temperature effects performance

Press Alt Ft	0°C		10°C		20°C		30°C		40°C	
	Maximum Gross Weight (lb)	Maximum Gross Weight (kg)	Maximum Gross Weight (lb)	Maximum Gross Weight (kg)	Maximum Gross Weight (lb)	Maximum Gross Weight (kg)	Maximum Gross Weight (lb)	Maximum Gross Weight (kg)	Maximum Gross Weight (lb)	Maximum Gross Weight (kg)
S.L.	30.0	13.6	30.0	13.6	29.5	13.4	28.5	12.9	27.6	12.5
1000	30.0	13.6	29.4	13.4	28.4	12.9	27.5	12.5	26.6	12.1
2000	29.4	13.3	28.4	12.9	27.4	12.4	26.5	12.0	25.7	11.6
3000	28.4	12.9	27.4	12.4	26.4	12.0	25.5	11.6	24.7	11.2
4000	27.3	12.4	26.4	12.0	25.5	11.5	24.6	11.2	23.8	10.8
5000	26.3	11.9	25.4	11.5	24.5	11.1	23.7	10.8	23.0	10.4
6000	25.4	11.5	24.5	11.1	23.6	10.7	22.8	10.4	22.1	10.0
7000	24.4	11.1	23.5	10.7	22.7	10.3	22.0	10.0	21.3	9.7
8000	23.5	10.7	22.7	10.3	21.9	9.9	21.2	9.6	20.5	9.3
9000	22.6	10.3	21.8	9.9	21.1	9.6	20.4	9.2	19.7	8.9
10000	21.8	9.9	21.0	9.5	20.3	9.2	19.6	8.9	19.0	8.6

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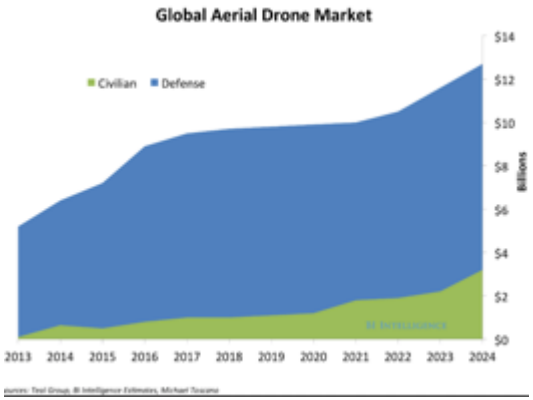
Challenge: Market Expectations

Multirotor UAV Market worth $2.28 Billion by 2020

According to the new market research report "Multirotor UAV Market by Application (Defense, Aerial Shooting, Business & Commerce, Law enforcement, Environmental Inspection), Payload (Electro-optic sensor, Cameras, Sense & Avoid System, LIDAR, CBRN, Wi-Fi, GPS), Region - Forecast to 2020", The multirotor UAV market is estimated to be valued at $840.21 Million in 2015. It is projected to register a CAGR of 22.2% to reach $2.28 Billion by 2020.



Teal Group Predicts Worldwide UAV Market Will Total $91 Billion in Its 2014 UAV Market Profile and Forecast

Bisresearch.com ...ss Intelligence & Strategy Partner
RESEARCH

UAV Market Worth $11.95 Billion in Next Five Years

Newsweek
U.S. WORLD BUSINESS TECH & SCIENCE

BUSINESS

Wal-Mart Wants to Test Drones for Home Delivery

BY REUTERS 10/26/15 AT 8:07 PM

AMAZON CAN NOW TEST ITS DELIVERY DRONES IN THE U.S.

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“Investible” Opportunities

- Commercial Grade Hardware and Software
- Smaller Dedicated Cameras / Sensors
- Lighter Weight Optics
- Batteries with Better Power to Weight Ratios
- Complete Aerial Systems
- More Efficient Designs
- Safer Designs
- Less Crowded or Niche Markets

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Investment Advice

- Do your own research
- Hire people actually in the business
- Plan for long term, but still make profits in the short term
- Find a Niche Market
- Be willing to take a chance!

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